passed through a 105 micron sieve. Sufficient fluoropolymer powder was prepared in this manner to load the powder coater (about one-half pound).

CLOSURE

While a preferred embodiment of the present invention has been shown and described, it will be apparent to those skilled in the art that many changes and modifications may be made without departing from the invention in its broader aspects. The appended claims are therefore intended to cover all such changes and modifications as fall within the true spirit and scope of the invention.

Claims

We claim:

1) A method for fabricating three dimensional structures comprising the steps of

a. providing a first layer of a photosensitive material of epoxy resin of bisphenol A glycidyl ether polymer) (CAS 28906-96-9) and a photoacid generator of mixed triarylsulfonium/hexafluoroantimonate salt (CAS 89452-37-9/ CAS 71449-78-0),

b. applying an external stimulus of UV light to said first layer, thereby creating voids in said first layer,

c. removing any material present in said voids,

d. providing a layer of a sacrificial material of a fluropolymer within at least a portion of said voids,

e. providing a second layer of photosensitive material of epoxy resin of bisphenol A glycidyl ether polymer) (CAS 28906-96-9) and a photoacid generator of mixed triarylsulfonium/hexafluoroantimonate salt (CAS 89452-37-9/ CAS 71449-78-0) on top of said layer of a sacrificial material; and

f. removing said sacrificial layer by dissolving said sacrificial layer in carbon dioxide.

2) A method for fabricating three dimensional structures comprising the steps of

a. providing a first layer of a photosensitive material,

b. applying an external stimulus in said first layer, thereby creating voids in said first layer,

c. removing any material present in said voids,

d. providing a layer of a sacrificial material within at least a portion of said voids, and

e. providing a second layer of photosensitive material on top of said layer of a sacrificial material.

3) The method of claim 2 further comprising the additional steps of

a. adding additional successive layers of photosensitive material,

b. applying an external stimulus to at least one of said successives layer of photosensitive material, thereby creating voids in at least one of said layers,

c. removing any material present in said voids,

d. providing additional successive layers of sacrificial material within at least a portion of said voids and interspaced between each of said additional successive layers of photosensitive material, and

e. removing the layers of sacrificial materials.

4) The method of claim 2 further comprising the additional step of removing the layer of a sacrificial material subsequent to the addition of the third layer.

5) The method of claim 2 wherein said photosensitive material is provided as selected from the group consisting of UV activated photoresists, electron beam activated resists, polymethylmethacrylates, UV cured adhesives and potting agents, UV cured conformal coatings, UV cured powder coatings, and combinations thereof.

6) The method of claim 2 wherein said photosensitive material is comprised of a resin and a curing agent.

7) The method of claim 6 where said resin is an epoxy.

8) The method of claim 7 where said epoxy is selected from the group consisting of bisphenol A glycidyl ether polymer (CAS 28906-96-9) (CAS 25068-38-6), p-tertbutylphenyl glycidyl ether (CAS 3101-60-8), a polyester, a urethane or combinations thereof.

9) The method of claim 6 where said curing agent is selected from the group consisting of mixed triarylsulfonium/hexafluoroantimonate salt (CAS 89452-37-9/ CAS 71449-78-0), 2-Hydroxy-4'-hydroxyethoxy-2-methylpropiophenone (CAS 106797-53-9), phenylbis(2,4,6-trimethyl benzoyl) phosphine oxide (CAS 162881-26-7), 1-hydroxycyclohexyl phenyl ketone (CAS 947-19-3), Bis(2,6-dimethoxybenzoyl)-2,4,4 trimethylpentylphosphineoxide (CAS 145052-34-2), 2,4,6 trimethylbenzophenone (CAS 954-16-5), 4-methylbenzophenone (CAS 134-84-9), 2-methylbenzophenone (CAS 131-58-8), 2,2-diethoxyacetophenone (CAS 6175-45-7), and combinations thereof.

10) The method of claim 5 where said electron beam material is selected from the group consisting of novolak type , an acrylate and styrene copolymer, a polymethylmethacrylate, or combinations thereof.

11) The method of claim 4 wherein said electron beam activated resist is AZ5200 - novolak type and ZEP7000 (an acrylate and styrene copolymer).

12) The method of claim 4 wherein said polymethylmethacrylates are selected from the group consisting of 495PMMA and 950PMMA.

13) The method of claim 4 wherein said UV cured adhesives and potting agents are selected from the group consisting of bisphenol A diglycidyl ether polymer) (CAS 25068-38-6), p-tertbutylphenyl glycidyl ether (CAS 3101-60-8) and combinations thereof.

14) The method of claim 4 wherein said UV cured conformal coatings are selected from the group consisting of 1A37HV and 1C61.

15) The method of claim 4 wherein said UV cured powder coatings are selected from the group consisting of vinylether urethane resins, polyester resins, and combinations thereof.

16) The method of claim 2 where said sacrificial material is soluble in liquid carbon dioxide.

17) The method of claim 2 where said sacrificial material is soluble in super critical carbon dioxide.

18) The method of claim 2 where said sacrificial material is soluble in a mixture of liquid carbon dioxide and a cosolvent selected from the group consisting of hydrofluoroethers, fluorocarbons, alkanes, other petroleum distillates, and combinations thereof.

19) The method of claim 2 where said sacrificial material is soluble in a mixture of super critical carbon dioxide and a cosolvent selected from the group consisting of hydrofluoroethers, fluorocarbons, alkanes, other petroleum distillates, and combinations thereof.

20) The method of claim 2 where said sacrificial material is removed by dissolving said sacrificial material in a solvent selected from the group consisting of liquid carbon dioxide, supercritical carbon dioxide,

hydrofluoroethers, fluorocarbons, alkanes, other petroleum distillates, and combinations thereof.

21) The method of claim 20 wherein said hydrofluoroethers are selected from the group consisting of methyl nonafluoroisobutylether CAS 163702-08-7, methyl nonfluorobutylether CAS 163702-07-6, ethyl perfluoroisobutyl ether CAS 163702-06-5, ethyl perfluorobutyl ether CAS 163702-05-4, and combinations thereof.

22) The method of claim 20 wherein said fluorocarbons are selected as perfluorocarbons CAS 86508-42-1.

23) The method of claim 20 wherein said alkanes are selected from the group consisting of hexane or other petroleum distillates.

24) The method of claim 2 wherein said sacrificial materials are selected from the group consisting of fluoropolymers, hydrocarbon waxes, fluorocarbon waxes, and combinations thereof.

25) The method of claim 24 wherein said fluoropolymers are selected from the group consisting of poly(perfluro N-octyl methacrylate) and poly(perflurocyclohexyl acrylate), and combinations thereof.

26) The method of claim 2 wherein said photosensitive material is provided as containing a functional material.

27) The method of claim 2 wherein said first layer of photosensitive material is provided on a layer of sacrificial material on a substrate.

28) The method of claim 27 further comprising the step of dissolving said sacrificial material, thereby releasing the resultant three dimensional structure from said substrate.

29) A three dimensional structure fabricated by the method of claim 2.